

ABSTRACT

A system and method is disclosed for reducing network message passing latency in a distributed multiprocessing computer system that contains a plurality of microprocessors in a computer network, each microprocessor including router logic to route message packets prioritized in importance by the type of message packet, age of the message packet, and the source of the message packet. The microprocessors each include a plurality of network input ports connected to corresponding local arbiters in the router. The local arbiters are each able to select a message packet from the message packets waiting at the associated network input port. Microprocessor input ports and microprocessor output ports in the microprocessor allow the exchange of message packets between hardware functional units in the microprocessor and between microprocessors. The microprocessor input ports are similarly each coupled to corresponding local arbiters in the router. Each of the local arbiters is able to select a message packet among the message packets waiting at the microprocessor input port. Global arbiters in the router connected to the network output ports and microprocessor output ports select a message packet from message packets nominated by the local arbiters of the network input ports and microprocessor input ports. The local arbiters connected to each network input port or microprocessor input port will request service from a output port global arbiter for a message packet based on the message packet type if the message packet is ready to be dispatched.